Title:

Shunt Outcome of Idiopathic Normal Pressure Hydrocephalus: a Hong Kong-wide review of 15 years

Authors and Institution:

ACO Tsang[1,2], JSW Chow[3], CY Hung[4], LY Ho[5], SL Chu[6], J Ho[7], GKK Leung[1], WM Lui[1]

[1.] *Division of Neurosurgery, Department of Surgery, Queen Mary Hospital, The University of Hong Kong*
[2.] *Princess Margaret Hospital, Hong Kong*
[3.] *Queen Elizabeth Hospital, Hong Kong*
[4.] *Pamela Youde Nethersole Eastern Hospital, Hong Kong*
[5.] *Prince of Wales Hospital, Hong Kong*
[6.] *Tuen Mun Hospital, Hong Kong*
[7.] *Kwong Wah Hospital, Hong Kong*

Abstract:

Background

Idiopathic normal pressure hydrocephalus (iNPH) is a potentially treatable cause of dementia and impaired mobility in the geriatric population. There are no standard diagnostic criteria and reliable predictors of treatment response is lacking. Ventriculo-peritoneal shunt (VPS) is the standard treatment with variable success rate.

Objective

To assess the functional outcome, complications and predictors of treatment response of iNPH patients treated with VPS in Hong Kong over the last 15 years.

Methods

All patients diagnosed with iNPH and received cerebrospinal fluid shunting procedure in the last 15 years in all seven neurosurgical centers in Hong Kong were retrospectively reviewed. Secondary normal pressure hydrocephalus was excluded. The complication rate, functional outcome and ambulatory status were analyzed. Baseline and cerebrospinal fluid tap test results were studied to identify potential predictive factors for treatment response.

Results

A total of 76 patients with a mean age of 70.6 years were included. At presentation, 93.4% of patients had gait disturbance, 72.4% had cognitive deterioration and 28.9% had incontinence. 68 patients received diagnostic CSF tap test with 83.8% showing symptomatic improvement after CSF release.

All patients underwent VPS, of which 44.7% had programmable valves. The overall complication rate was 22.4 %, including 5 shunt infections, 3 tract hematomas, 1 misplacement, and 8 overdrainage subdural hematomas, leading to a reoperation rate of 11.8%.

64 patients were analyzed at 1 year for functional outcome (10 patients died and 2 patients were lost to follow-up). 75.4% had symptomatic improvement 1 year after shunting, with a median Karnovsky performance scale of 70 (range 30-100). 73.3% of patients were home-cared. 29.7% could walk unaided, while 48.6% required a walking aid and 21.6% remained chair or bed-bound at 1 year. Symptomatic improvement after CSF tap test was the only significant factor associated with treatment response (84% vs 45.5%, p=.006)

Conclusion

Ventriculoperitoneal shunt provided a high response rate in properly selected patients with iNPH in our locality. 84% of patients with positive CSF tap test had symptomatic improvement at 1 year after shunting. The complication rate, however, was significant. Future efforts should aim to reduce surgical complication, and to improve the diagnostic and referral pathway for this treatable but under-diagnosed condition.